

6

Science Standard
6.6.a.



Energy: It's Not All the
Same to You!

California Education and the Environment Initiative

Approved by the California State Board of Education, 2010

The Education and the Environment Curriculum is a cooperative endeavor of the following entities:

California Environmental Protection Agency
California Natural Resources Agency
Office of the Secretary of Education
California State Board of Education
California Department of Education
California Integrated Waste Management Board

Key Leadership for the Education and Environment Initiative:

Linda Adams, Secretary, California Environmental Protection Agency
Patty Zwarts, Deputy Secretary for Policy and Legislation, California Environmental Protection Agency
Andrea Lewis, Assistant Secretary for Education and Quality Programs, California Environmental Protection Agency
Mark Leary, Executive Director, California Integrated Waste Management Board
Mindy Fox, Director, Office of Education and the Environment, California Integrated Waste Management Board

Key Partners:

Special thanks to **Heal the Bay**, sponsor of the EEI law, for their partnership and participation in reviewing portions of the EEI curriculum.

Valuable assistance with maps, photos, videos and design was provided by the **National Geographic Society** under a contract with the State of California.

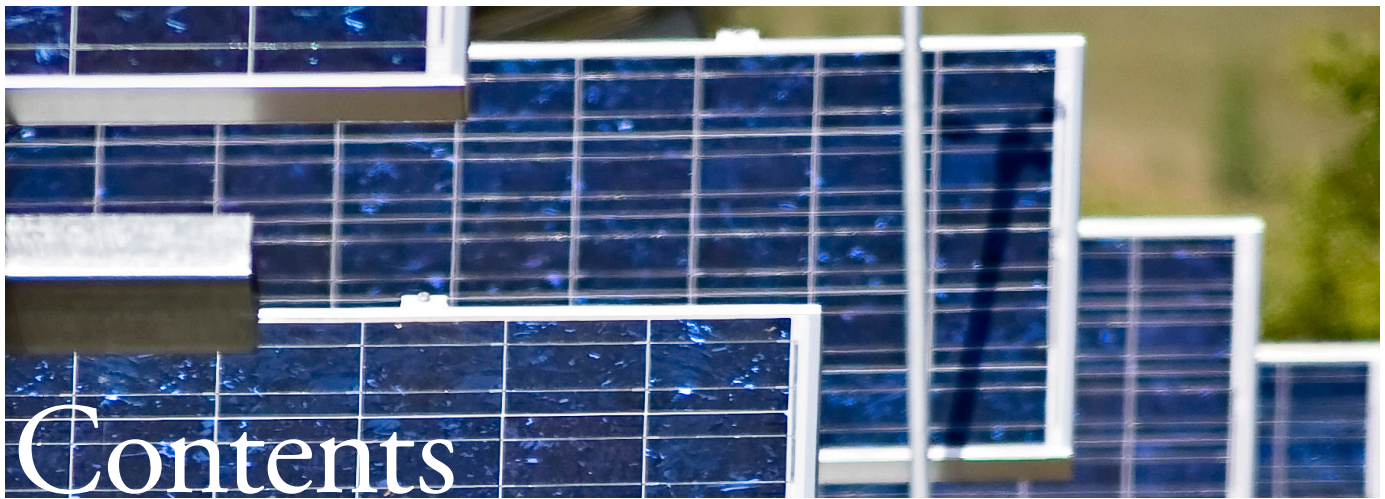
Office of Education and the Environment

1001 I Street • Sacramento, California 95812 • (916) 341-6769
<http://www.calepa.ca.gov/Education/EEI/>

© Copyright 2010 by the State of California
All rights reserved.

This publication, or parts thereof, may not be used or reproduced without permission from the
Office of Education and the Environment.

These materials may be reproduced by teachers for educational purposes.



Lesson 1 Energy Sources and Resources

None required for this lesson.

Lesson 2 Converting Energy

1	Inside the Power Plant	2
2	Comparing Energy Sources	3
3	Cooling Towers	4

Lesson 3 Byproducts of Electrical Production

4	California's Power Mix	5
----------	----------------------------------	---

Lesson 4 Effects of Energy Choices

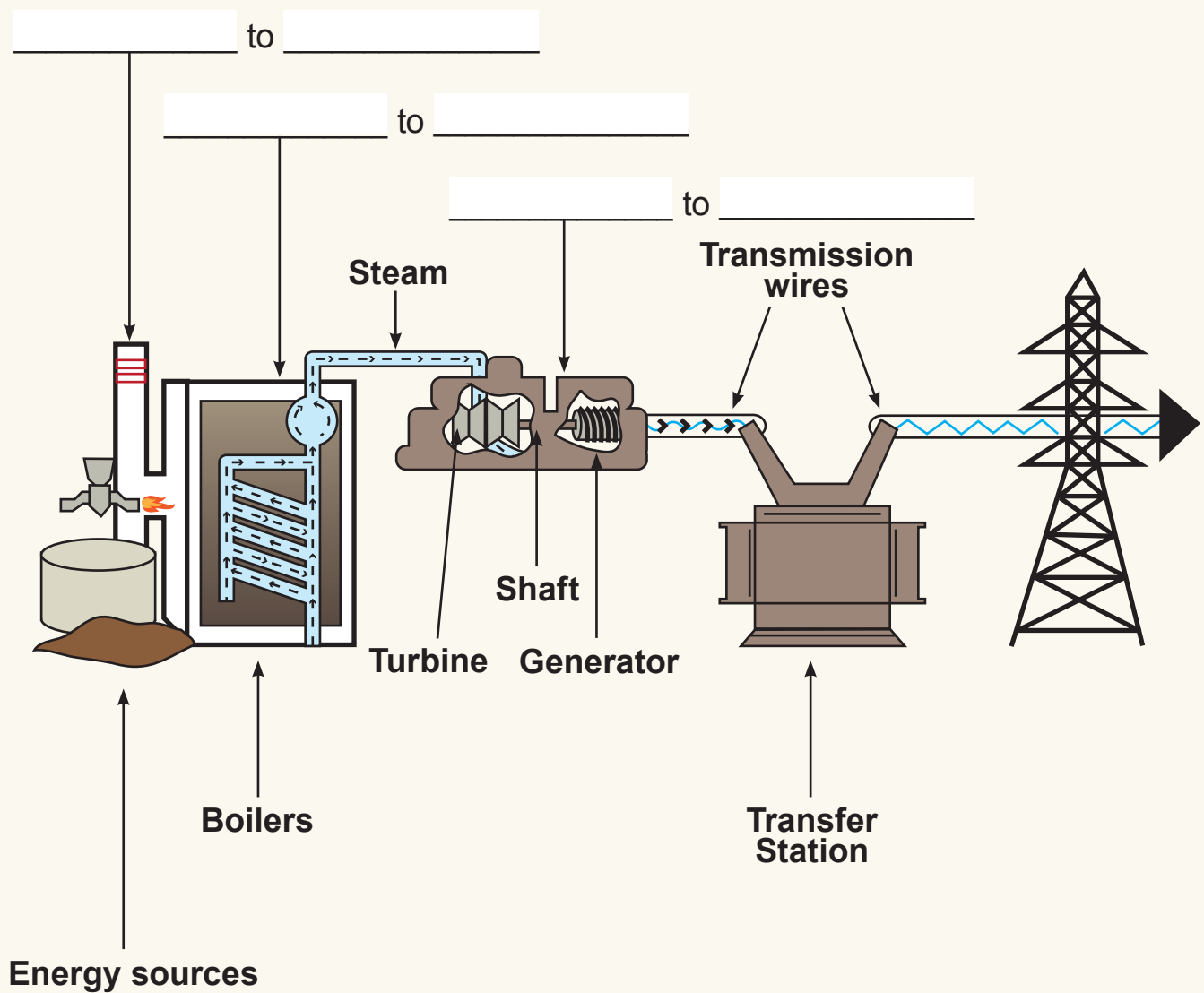
5	Grinnell Glacier	6
6	Nuclear Power Plant Cooling Canals	7
7	Electricity Consumption per Capita	8
8	Total Electricity Consumption	9

Lesson 5 Energy Choices—No Free Lunch

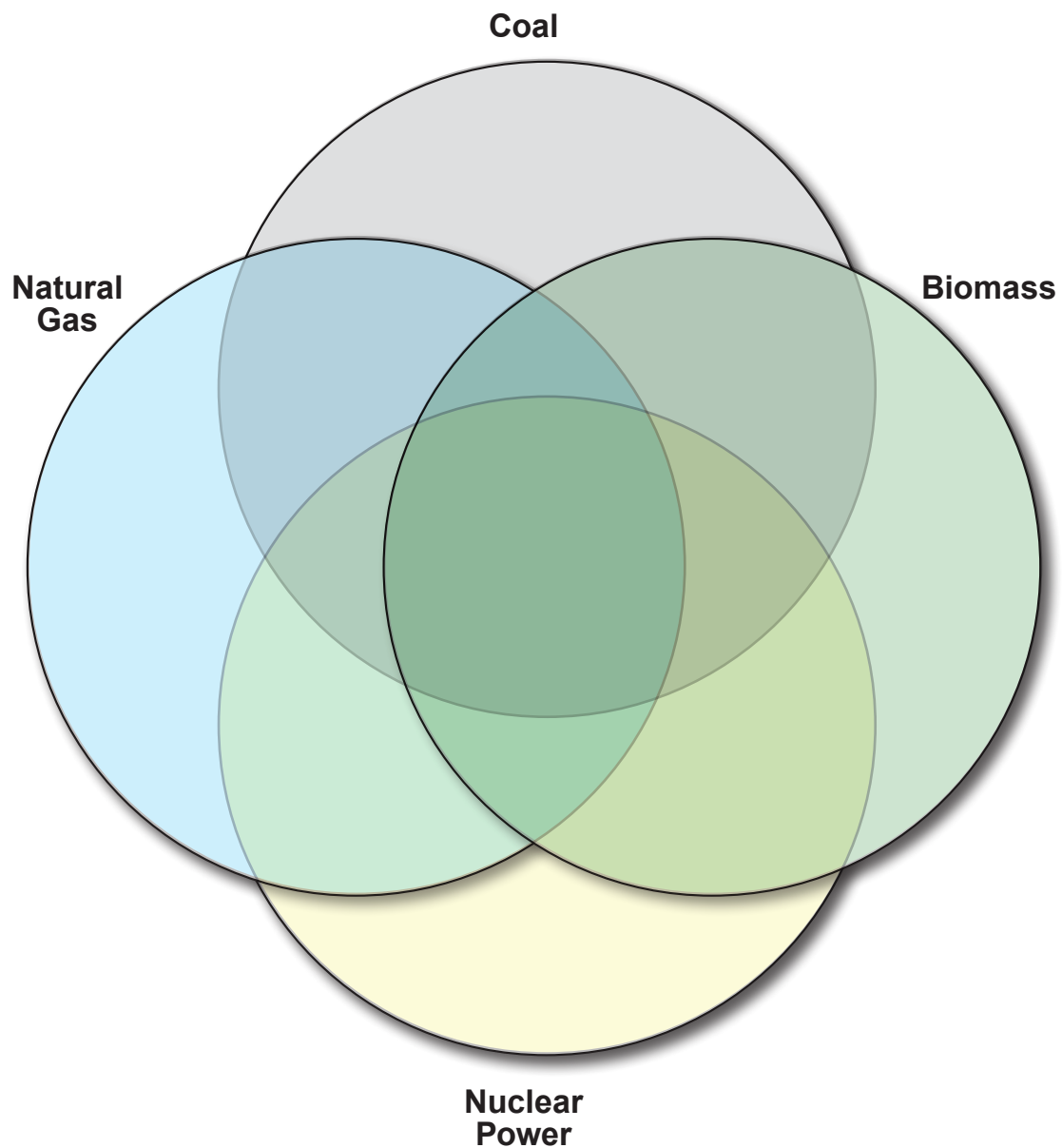
None required for this lesson.

VA #1 Inside the Power Plant

Energy conversions



VA #2 Comparing Energy Sources



VA #3 Cooling Towers



VA #4 California's Power Mix

Energy Source	Percent of Total
Natural Gas	45.2%
Coal	16.6%
Nuclear	14.8%
Large Hydro	11.7%
Renewable Sources:	
Geothermal	4.5%
Small Hydro	2.8%
Wind	2.3%
Biomass	2.1%
Solar	0.2%
Total	100%

California Energy Sources—2007

Source: California Energy Commission

VA #5 Grinnell Glacier



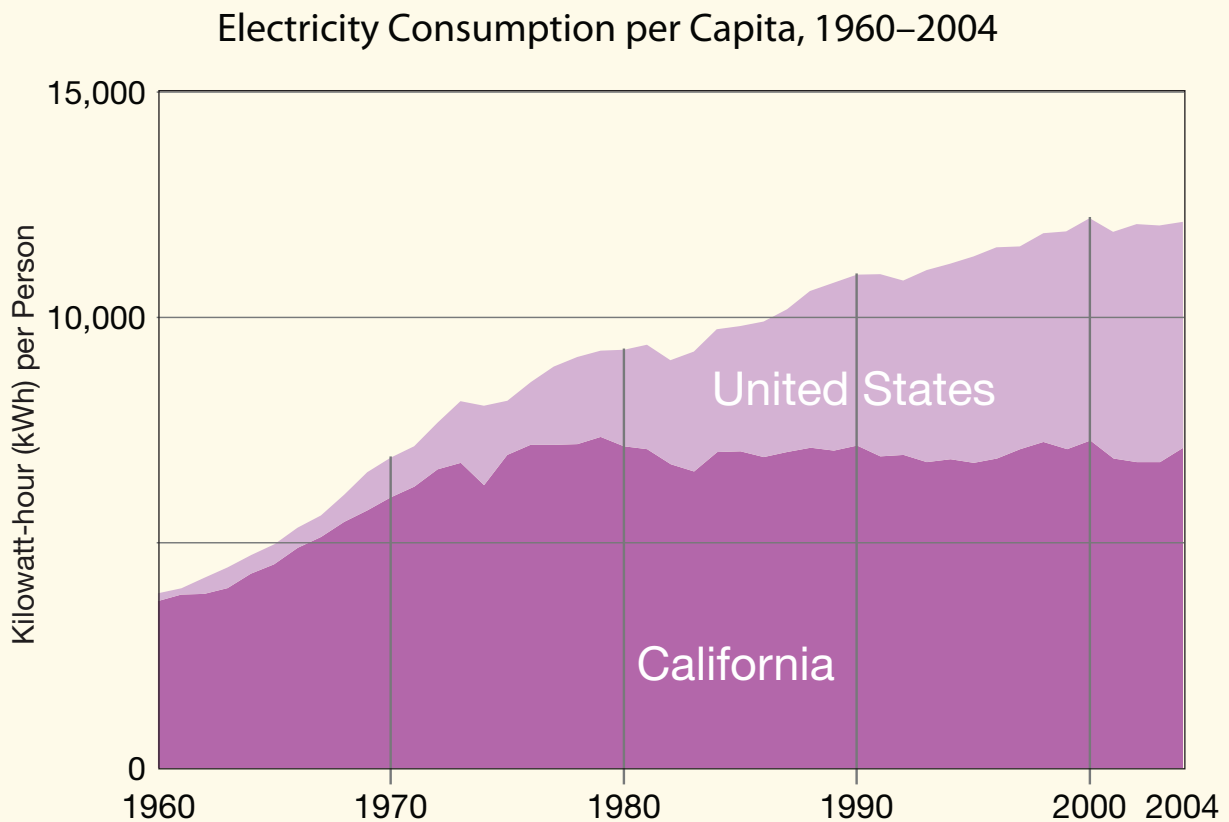
Montana, 1910



Montana, 1998



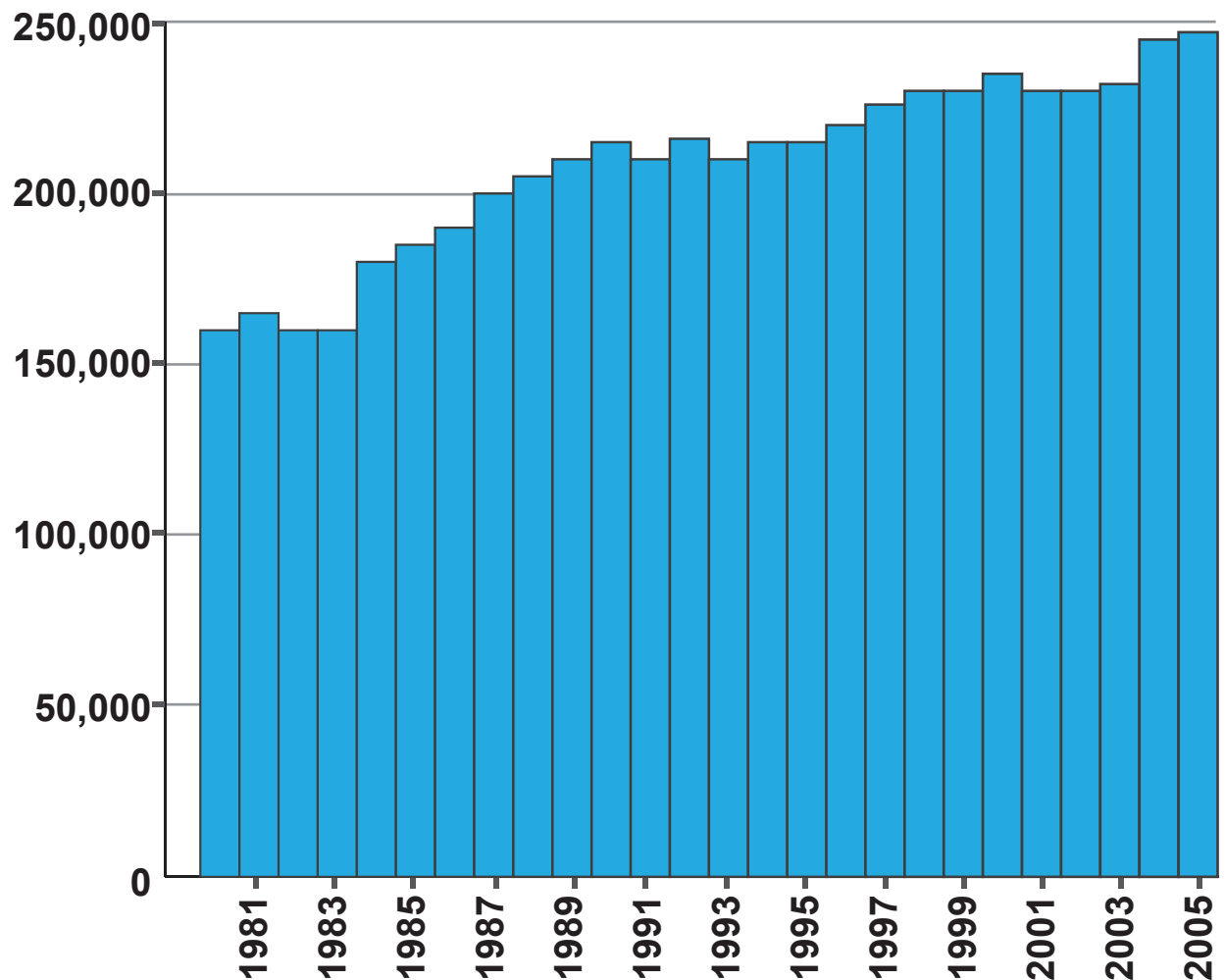
VA #7 Electricity Consumption per Capita



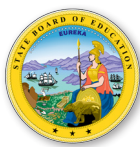
Source: California Energy Commission

VA #8 Total Electricity Consumption

Total Electricity Consumption in California 1980–2005
(million kWh)



Source: U.S. Department of Energy



California STATE BOARD OF
EDUCATION

California Education and the Environment Initiative